A Comprehensive Phylogenetic Study of Amiid Fishes (Amiidae) Based on Comparative Skeletal Anatomy

etal structures used by the male to transfer spermatophores to the female, and by the female to store transferred spermatophores. The morphological diversity of these structures has been documented exactingly by the senior author, and supports our understanding that selection, presumably by the opposite sex, on secondary sex characters is an expression of the speciation process among these crustaceans.

A second type of illustration, a lateral view of the representative species, was executed by Molly Kelly Ryan, an illustrator with the National Museum. Crustacean taxonomy is a comparative morphology of parts (body somites, appendage segments). Ryan's elegant illustrations remind readers of the remarkable morphological diversity represented by the entire shrimp.

Both authors have contributed significantly to the development of the National Museum's crustacean collection, which is the most important collection in the world today. This volume provides a wonderful testimony to the results of that development and to the scientific value of the collection.

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A COMPREHENSIVE PHYLOGENETIC STUDY OF AMIID FISHES (AMIIDAE) BASED ON COMPARATIVE SKELETAL ANATOMY. *An Empirical Search for Interconnected Patterns of Natural History. Society of Vertebrate Paleontology, Memoir 4.*

By Lance Grande and William E Bemis. Chicago (Illinois): Society of Vertebrate Paleontology. $75.00. x + 690 p + 2 foldouts; ill.; taxonomic and subject indexes. ISSN: 0272-4634. [Supplement to *Journal of Vertebrate Paleontology*, Volume 18, Number 1.] 1998.

The clade of ray-finned fishes (Actinopterygii) comprises roughly half of all vertebrates, with about 24,000 species. The vast majority of ray-finned fish species are contained in the Teleostei, a clade noted for its diversity of behavior, functional morphology, and ecology in aquatic habitats throughout the world. One of the keys to understanding the origin of teleost fishes are analyses of outgroup clades: nonteleost ray-finned fishes that retain plesiomorphic traits and hence provide considerable insight into the early evolution of ray-finned fishes. Unfortunately, very few such clades are available for analysis. Polypterids, sturgeons, paddlefishes, and gars are notable basal clades, as are the amiid fishes described in detail in this extensive monograph. Given the biological importance of these basal ray-finned fish clades, it is remarkable how little is known about relatively accessible features such as the anatomical structure of extant species. In a previous monograph, Grande and Bemis described the skeletal anatomy and phylogenetic relationships of paddlefishes, and in this volume they have undertaken a remarkably detailed and comprehensive overview of the amiid clade.

Although the family Amiidae has only one living species (the endemic North American bowfin *Amia calva*), four subfamilies are known from fossils that exhibit considerable morphological diversity. Grande and Bemis provide extremely detailed descriptions of skeletal anatomy in all amiid fishes, with considerable attention paid to variation and ontogeny of skeletal traits. The book concludes with a phylogenetic analysis. This volume is profusely illustrated and many of these figures consist of photographs side by side with detailed interpretive illustrations. Although the specifics of the descriptive work will be of interest mainly to those working on fish anatomy and phylogeny, the main lesson of this volume is the stunning amount of comparative data that can be obtained from a study of even one anatomical system. Grande and Bemis demonstrate convincingly the value of a detailed analysis of morphological systems and the thousands of characters that can be extracted from such an analysis. Biologists interested in understanding the value of comprehensive morphological analysis and its lasting contribution to understanding organismal design should peruse this book.

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FOULING ORGANISMS OF THE INDIAN OCEAN: BIOLOGY AND CONTROL TECHNOLOGY.

Edited by Rachakonda Nagabhushanam and Mary-Frances Thompson. Rotterdam and Brookfield (Vermont): A. A. Balkema. $185.00. ix + 538 p; ill.; organism index. ISBN: 90-5410-739-1. 1997.

This book falls broadly into two sections and, like the curate's egg, it is good in parts. The first section consists of six chapters, starting with an overview of Indian research efforts on marine wood-boring and fouling organisms (Nagabhushanam and Sarojini) and progressing through five chapters that deal respectively with biological and technical aspects of marine aufwuchs (Wahl), natural antifouling compounds (Targett), succession in microfouling communities (Little and Wagner), chemical cues in larval settlement (Slattery) and biofouling control (Nair et al.). These five authoritative review chapters, written by internationally acclaimed experts in the field, are the real strength of the book. They are well written and clearly illustrated, and will be of considerable value to anyone with an interest in marine biofouling.

The second section, consisting of ten chapters and comprising well over half the total length of